



TECHNOLOGY ADVISORY: WINDOWS VISTA

STATE OF UTAH

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1.0 INTRODUCTION

The State of Utah currently has an environment in excess of 20,000 work stations. Making changes to a large environment that has an impact at the operating system (OS) level requires thoughtful assessment of the existing hardware environment and related infrastructure services, such as the network, access, e-mail, and print services. Additional assessment is required for software compatibility at both a workstation and information system level. Any migration will have direct cost impacts on the existing hardware and installed software base. New functionality and capability also has a direct impact on training and some potential changes to the scope of current help desk services. This report provides an overview of these considerations and the probable impacts and planning considerations associated with adopting Windows Vista and the related migration to Office 2007.

1.1 VISTA OVERVIEW

Vista is Microsoft's latest release of the Windows operating system and is designed to replace Windows XP. Windows Vista is available in the United States in five different editions, which has caused a fair amount of customer confusion. Windows Vista Business is the standard OEM version that is shipping on new computers purchased from sources such as Dell, HP, etc., and is the version most likely to be utilized within State government agencies. The Windows Vista Enterprise edition is targeted toward enterprise customers that have purchased Software Assurance. The other editions are primarily focused on home and home power users.

Windows Vista Ultimate—This is the most complete edition, with power, security, mobility, and entertainment features.

Windows Vista Home Premium—This is the preferred edition for home desktop and mobile PCs. This version is the standard upgrade for Windows Media Center Edition 2005.

Windows Vista Home Basic—This version is for basic home computing needs.

Windows Vista Business—This version is designed specifically to meet the needs of business users and is the standard upgrade for Windows XP Professional. This is the standard OEM distribution version that will ship on PCs purchased by the State from existing contract vendors.

Windows Vista Enterprise—This edition is designed for global organizations and enterprises with complex IT infrastructures. Building on the features in Windows Vista Business, Windows Vista Enterprise provides higher levels of data protection using hardware-based encryption technology. It also includes tools to improve application compatibility and enables organizations to standardize by using a single deployment image. Windows Vista Enterprise is available *only* to volume license customers who have PCs covered by Microsoft Software Assurance.

Most organizations anticipating Vista deployment are recommending the Windows Vista Business edition for organizational implementation and the Windows Vista Home Premium edition for personal use, especially for computers that may need to connect to business networks and may be used for work related activity. The features of the enterprise edition are dependent upon Software Assurance, which is available under the State contract with Microsoft as a cost option. This option has not been used by agencies for desktop environments. Software Assurance for all desktops represents a recurring multi-million dollar annual cost to the State.

1.2 VISTA ADVANTAGES AND BUSINESS BENEFITS

Microsoft provides a Microsoft Windows Vista Cost and Benefit Estimator at http://www.microsoft.com/technet/windowsvista/ROltool/Default.aspx?wt_svl=20041a&mg_id=20041b. Benefits for enterprise Vista deployment in an organization like the State of Utah, as identified by Microsoft, include:

Potential Business Benefits

- Improved Performance and Reliability
- Reduced Computer Failures
- Improved Power Management
- Improved Application Responsiveness
- Reduced Information Theft
- Improved Information Management
- Improved Mainframe Access

Potential IT Benefits

- Reduction in Security Breaches
- Reduction in Security Resolution Time (per issue)
- Reduction in Patch Updates
- Reduction in Patch Management Time (per patch)
- Potential FTEs Redeployed with Automated Management
- Reduction in Help Desk Tickets
- Reduction in Image Management Time (per image)

Potential User Benefits

- Reduction in Reboots (per user per week)
- Computer Failures Avoided
- Reduction in File Search Time (per file)
- Reduction in Files Lost

Accurately quantifying the value of the benefits identified by Microsoft is difficult, but from a Vista only perspective the indication is a cost benefit recovery in 11 to 12 months. By the time hardware replacement costs are factored in to the model the real payback is more likely to be in the three to four year range. Payback appears to be dependent upon a consolidated approach to desktop management in the State, as well as an assessment of economic value to many of the soft, and usually difficult to quantify, benefits, such as those identified as potential user benefits.

Most writers have had difficulty identifying any significant business benefits for Windows Vista, so understanding the Microsoft perspective may be of value.

1.3 NEW VISTA SOFTWARE SOLUTIONS (OFFICE 2007)

This document was created using Microsoft Office Enterprise 2007 tools in order to assess the learning curve required for an experienced Word user to adapt to the new and enhanced user interface. The State is most likely to purchase Office Standard 2007, Office Professional 2007, or Office Professional Plus 2007. Office 2007 is available in a variety of releases which are detailed in Figure 1.¹

New software components that may be of interest to the State for certain types of users include: Microsoft InfoPath 2007; Integrated Enterprise Content Management; and Integrated Electronic Forms. Microsoft Publisher 2007 offers a possible cost avoidance strategy for moving to Vista compatible versions of PageMaker for some employees. All of these applications are provided in the Microsoft Office Professional Plus 2007 option.

The State should proactively identify which versions of Office 2007 will be procured and supported from both training and cost perspectives.

¹ 2007 Microsoft Office System Suites <http://office.microsoft.com/en-us/products/FX101635841033.aspx>


	Microsoft Office Basic 2007	Microsoft Office Home & Student 2007	Microsoft Office Standard 2007	Microsoft Office Small Business 2007	Microsoft Office Professional 2007	Microsoft Office Ultimate 2007 NEW!	Microsoft Office Professional Plus 2007	Microsoft Office Enterprise 2007 NEW!
Microsoft Office Word 2007	●	●	●	●	●	●	●	●
Microsoft Office Excel 2007	●	●	●	●	●	●	●	●
Microsoft Office PowerPoint 2007		●	●	●	●	●	●	●
Microsoft Office Outlook 2007	●		●				●	●
Microsoft Office Outlook 2007 with Business Contact Manager ¹				●	●	●		
Microsoft Office Accounting Express 2007 ²				●	●	●		
Microsoft Office Publisher 2007				●	●	●	●	●
Microsoft Office Access 2007					●	●	●	●
Microsoft Office InfoPath 2007						●	●	●
Microsoft Office Groove 2007						●		●
Microsoft Office OneNote 2007		●				●		●
Microsoft Office Communicator 2007 ³							●	●
Integrated Enterprise Content Management						●	●	●
Integrated Electronic Forms						●	●	●
Advanced Information Rights Management and Policy Capabilities						●	●	●

Figure 1. Microsoft Office System Suite Configurations

Overall, Word 2007 was relatively easy to use, although initially adapting to the new UI and finding locations for familiar functions imposed about 20% more time than would have been required if a previous version of Word had been used. While that does not seem to be a substantial impact and is related to a one time learning curve, it is likely that many employees will find initial startup to be more difficult and this will spawn training requirements for using Office 2007.

Office 2007 includes more improvements into the application suite than any previous upgrade. For most users, the big question will not be whether to upgrade but when. Experts, beginners, and most ordinary users all get major benefits from the upgrade. The downside is that the new “ribbon” interface is not applied to all applications, and document sharing will be more complicated in a diverse environment.

1.4 VISTA MIGRATION AND ASSESSMENT TOOLS

Microsoft provides a useful suite of six migration and compatibility testing tools². The more important tools that could be used by the State include:

Windows Vista Hardware Assessment—The Windows Vista Hardware Assessment solution accelerator is an inventory, assessment, and reporting tool that will find computers on a network and determine if they are ready to run the Windows Vista™ operating system.

Microsoft Application Compatibility Toolkit 5.0—The Microsoft Application Compatibility Toolkit (ACT) 5.0 is a lifecycle management tool that assists in identifying and managing an overall application portfolio, reducing the cost and time involved in resolving application compatibility issues, and helping to quickly deploy Windows Vista and Windows updates.

Virtual PC 2007—Virtual PC allows the user to maintain the compatibility of legacy and custom applications during migration to new operating systems and increases the efficiency of support, development, and training staffs. Virtual PC 2007 permits the user to create and run one or more virtual machines, each with its own operating system, on a single computer. This provides the flexibility to use different operating systems on one physical computer.

Windows Vista Upgrade Advisor 1.0—Windows Vista Upgrade Advisor is a desktop tool designed to help Windows XP users identify whether their PCs are ready for an upgrade to Windows Vista, which edition of Windows Vista meets their needs, and which features of Windows Vista will be able to run on their PCs.

Microsoft provides the following recommended steps for testing and ultimate deployment of Vista and Office 2007 in an enterprise environment³. The steps include:

1. **Application Compatibility Testing**—Test the existing application portfolio and identify remediation and mitigation strategies.
2. **Imaging**—Build standard OS images for the organization.
3. **Infrastructure Management**—Inventory hardware assets for centralized management and optimize the infrastructure for OS deployment.
4. **Application Management**—Identify core and supplemental applications and develop and test deployment methodologies.
5. **Deployment Process**—Develop the deployment methodologies for light touch and zero touch deployment.
6. **Office Deployment**—Choose the Office 2007 editions that will be deployed and related methodologies and access points.

² *Microsoft Rolls Out Six Vista Migration Tools*, eWeek.com, February 20, 2007, <http://www.eweek.com/article2/0,1895,2096747,00.asp>

³ *Microsoft Desktop Deployment Center*, <http://www.microsoft.com/technet/desktopdeployment/default.msp>

7. **User State Migration**—Capture, store, and migrate user state OS and application data to the new Vista environment.
8. **Security/Patching**—Choose and enable the security configuration of desktops, manage security updates, and maintain desktop security.

Implicit in all of the Microsoft recommendations is the concept of managing the desktop environment as an enterprise resource with common standards and security requirements.

1.5 RECENT VISTA DECISIONS AT OTHER GOVERNMENT AND BUSINESS ORGANIZATIONS

A number of organizations have published their Vista migration policies. In general, most organizations are deferring implementation until major software compatibilities with Vista have been resolved. Many of the early concerns have focused on Vista security issues. Examples of concerns and policy statements from some of these organizations include:

US Department of Transportation—CIO Daniel Mintz says he has placed "an indefinite moratorium" on the upgrades as "there appears to be no compelling technical or business case for upgrading to these new Microsoft software products. Furthermore, there appears to be specific reasons not to upgrade." Among the concerns cited by Mintz is compatibility with software applications currently in use at the Department, the cost of an upgrade, and DOT's move to a new headquarters in Washington later this year. "Microsoft Vista, Office 2007, and Internet Explorer 7.x may be acquired for testing purposes only. We're analyzing different client software options and also integration issues," says Schmidt. Among the options the Transportation Department is weighing as a possible alternative or complement to Windows Vista are Novell's Suse Linux and, for a limited group of users, Apple's Macintosh hardware and software⁴."

NIST—"We are temporarily not permitting computers with the Vista operating system to be connected to our networks," Michael Baum, an NIST spokesman said. The organization's technology staff is testing NIST applications and evaluating the security in Windows Vista. The same holds true for Internet Explorer 7 and Office 2007⁵."

Federal Aviation Administration (FAA)—"FAA CIO Dave Bowen told InformationWeek that he may forego upgrading the aviation safety agency's computers to Microsoft's latest offerings in favor of desktops running some combination of Linux and Google Apps, Google's new online suite of office productivity tools. Among other things, Bowen said he is concerned that Windows

⁴ Microsoft Hit By U.S. DOT Ban On Windows Vista, Explorer 7, and Office 2007, <http://www.informationweek.com/news/showArticle.jhtml?articleID=197700789>

⁵ Microsoft Suffers Latest Blow As NIST Bans Windows Vista, <http://www.informationweek.com/news/showArticle.jhtml?articleID=198000229>

Vista may be incompatible with many software applications already in use at the FAA⁶.”

Harvard’s John F. Kennedy School of Government—“At this time, KSG IT Services recommends that purchasers of new computers to be used at the Kennedy School continue to order machines with Windows XP Professional. We do not recommend Microsoft Vista at this time because of numerous bugs and incompatibility issues. One of the main issues with running MS Vista is it will not run in a Novell Netware environment, and as a result, Vista machines cannot print to KSG networked printers. The IT department will be testing and monitoring Vista over the next several months, and you will be notified as soon as we provide full support⁷.”

University of South Carolina—“UTS will provide Windows Vista to its Desktop Service Level Agreement customers once our testing and configuration program is completed. We are working to ensure that University applications and systems will perform correctly once the new operating system is installed⁸.”

Northwestern University—“Due to several known software and hardware incompatibilities, NUIT recommends that users wait to upgrade to Microsoft's newest operating system, Windows Vista, until at least early fall or after Service Pack 1 is released. In testing Vista, NUIT and campus technology leaders have found incompatibilities with key software and peripherals, so early adoption of the operating system—at the office and at home—is not recommended⁹.”

A number of States have established sites that are providing advisory information for Vista migration and upgrades. Of the State sites that were reviewed, few recommended any explicit implementation strategy; most States had no written position, and were merely providing Vista information. The best information on actual policy approaches are found at federal and university sites. Corporate policies were not reviewed.

⁶ *FAA May Ditch Microsoft's Windows Vista And Office For Google And Linux Combo*, <http://www.informationweek.com/news/showArticle.jhtml?articleID=197800480>

⁷ *Microsoft Vista Upgrade: Vista not Ready for Release*, <http://www.ksg.harvard.edu/is/student/vista.htm>

⁸ *Office of Information Technology Frequently Asked Questions: Windows Vista*, <https://helpdesk.uts.sc.edu/vista/faq.asp>

⁹ *Windows Vista at Northwestern: Wait to Upgrade*, <http://www.it.northwestern.edu/transitions/2007/vista.html>

1.6 VISTA HARDWARE REQUIREMENTS

The hardware requirements for the business version of Vista, which is the version supplied by OEM vendors, are:¹⁰

- 1 GHz 32-bit (x86) or 64-bit (x64) Processor
- 1 GB of System Memory
- 40 GB Hard Drive (with at least 15 GB of available space)
- Support for DirectX 9 Graphics, with:
 - Windows Display Driver Model (WDDM) Driver
 - 128 MB of Graphics Memory (minimum)
 - Pixel Shader 2.0 in Hardware
 - 32 bits per pixel
- DVD-ROM Drive
- Audio Output
- Internet Access

Microsoft has also detailed minimum requirements for Vista at the same location, although these minimums do not support the new Vista graphics functionality and provide a very slow OS environment. Most users would consider the minimum environment to provide an unacceptable level of performance and OS benefits.

- 800 MHz Processor and 512 MB of System Memory
- 20 GB Hard Drive (with at least 15 GB of available space)
- Support for Super VGA Graphics
- CD-ROM Drive

1.6.1 Requirements to Make a Machine Ready for a Vista Upgrade

For purposes of this report, the single user *Windows Vista Upgrade Advisor 1.0* was utilized to assess the requirements for upgrading specific hardware platforms to Vista. Two specific platform environments were tested, but a much more comprehensive testing approach is needed. The following examples illustrate the basic machine configuration and samples of the types of problems that were encountered by reproducing the Vista report for the Dell laptop:

¹⁰ *Windows Vista recommended system requirements*,
<http://www.microsoft.com/windows/products/windowsvista/editions/systemrequirements.mspx>.

Platform 1: Dell D620 Laptop (built in April 2006)

Configuration Details—Dual Core T2300 Processor, 2GB RAM, 80GB Hard Drive, ATI 128MB Video Card with WDDM Drivers, and Windows XP Professional OS.

Category	Action Required	Explanation
CPU	BIOS Upgrade	Computer's CPU is Genuine Intel® CPU T2300 @ 1.66GHz
System memory (RAM)	No action required	Computer has 2.00 GB of RAM
DVD drive	No action required	Computer can read DVDs
Video card	No action required	Current video card will support the Windows Aero

Device Issues—There were no significant device issues, but many devices, such as network connected printers, were not recognized by the testing tool.

Software Issues

Program	Vendor	Version	Data Source	Action Required
Document Manager			Microsoft	This program must be uninstalled before upgrading to Windows Vista. After upgrading, the user can try reinstalling the program. For more information, go to the vendor's Web site.
McAfee SpamKiller	McAfee, Inc.	7.0.2.5	Microsoft	This program might have minor compatibility issues after upgrading to Windows Vista. For more information, go to the vendor's Web site.
Intel PROSet Wireless	Intel Corporation	10.5.1.0	Microsoft	This program might have minor compatibility issues after upgrading to Windows Vista. For more information, go to the vendor's Web site.
NetWaiting	BVRP Software, Inc	2.5.23	Microsoft	This program might have minor compatibility issues after upgrading to Windows Vista. For more information, go to the vendor's Web site.
Digital Line Detect	BVRP Software, Inc	1.15	Microsoft	This program might have minor compatibility issues after upgrading to Windows Vista. For more information, go to the vendor's Web site.
Windows Messenger			Microsoft	This program might have minor compatibility issues after upgrading to Windows Vista. For more information, go to the vendor's Web site.

ALPS Touch Pad Driver	Alps Electric Co., Ltd.		Microsoft	This program might have minor compatibility issues after upgrading to Windows Vista. For more information, go to the vendor's Web site.
Dell Inc. Utilities	Dell Inc.		Dell Inc.	Go to the manufacturer's Web site to download the latest utilities for the system.
Microsoft Interactive			Microsoft	This program has compatibility issues and will not work in Windows Vista. For more information, go to the vendor's Web site.
Microsoft ActiveSync 4.0	Microsoft Corporation	4.2.4876.0	Microsoft	This program has compatibility issues and will not work in Windows Vista. For more information, go to the vendor's Web site.

Platform 2: HP Desktop (built in July 2006)

Configuration Details—Dual Core AMD 64 X 2 Dual Core Processors, 1GB RAM, 200GB Hard Drive, ATI 128MB Video Card with WDDM Drivers, and Windows Media Center Edition 2005 OS

Optimal Vista Configuration—Windows Vista Home Premium Edition 2007.

The HP platform tested yielded similar results but did not require a BIOS upgrade. There were only four software issues, but many connected device issues. Most of the device issues required replacement of scanners and printers, since they had no Vista specific drivers available. Completely bringing this platform into compliance, except for the device issues, took about two hours.

1.6.2 Impact of Vista Upgrades on the Existing Desktop Environment

Vista upgrade complexity is significant and varies widely based on specific machine and software environment characteristics. While purchasing new workstations with Vista pre-installed is not a major issue, upgrades are unpredictable in terms of complexity and the ability to create a stable Vista OS environment that performs to Microsoft specifications. The diversity of the current State environment would tend to make upgrades a very difficult problem, unless certain models of machines could be profiled so the upgrade can be implemented on a standardized basis.

1.7 VISTA ISSUE SUMMARY

To implement Vista across the enterprise is a significant undertaking. The Federal Department of Transportation has made the following statement:

There appears to be no compelling technical or business case for upgrading to these new Microsoft software products.¹¹

Analysts such as IDC and Gartner have also expressed recommendations to move slowly with Vista implementations:

In a recent report, IDC analyst Al Gillen wrote, “Business customers should take a cautious approach to adopting new Windows technologies and need to go through a normal evaluation cycle.” Adding, “Most organizations should incorporate a move to Windows Vista in their longer-term road map—unless they are planning to move toward competitive solutions.”

“A number of organizations will require up to 18 months after the Vista ship date to verify their applications, get other software makers to support the operating system and run tests,” analyst firm Gartner said in a December report. “Sooner or later, most organizations will deploy Windows Vista,” Gartner’s analysts stated¹².

Concerns over business value are a recurring theme in most of the ongoing Windows Vista discussions. Issues with Vista implementation impact seven major areas, excluding specific concerns with Office 2007:

- Accuracy and Availability of Existing Hardware and Software Application Inventory
- Demonstrable Business Value and Benefit
- Hardware Compatibility
- Platform Software Compatibility
- Security Concerns
- Enterprise Application Software Compatibility
- Enterprise Information Systems Compatibility

All of these issues are factors in establishing any kind of meaningful cost benefit assessment of implementing Vista at the State, not to mention practical considerations for simply carrying out a coherent Vista implementation strategy. Most writers consider the business benefits to be minimal, but virtually all agree that Vista is a more stable

¹¹ *Federal agencies ban Windows Vista*, March 13, 2007, http://news.com.com/2100-1002_3-6166868.html

¹² *Federal Agencies Ban Windows Vista due to Compatibility Problems and Several Other Issues*, March 15, 2007, <http://www.techshout.com/software/2007/15/federal-agencies-ban-windows-vista-due-to-compatibility-problems-and-several-other-issues>

and reliable environment than its predecessors, and will ultimately be a part of the OS environment for most large organizations.

1.7.1 Vista—Security Issues

Security concerns range from specific vulnerability issues, such as buffer overflows, to the propensity for Vista to generate increased numbers of security alerts that are sent to end users. There is concern that this issue alone will complicate Vista support issues. As of this date no summative list of specific security issues has been identified, but for agencies such as NIST this is a major area of concern.

Major concerns that impact Vista security¹³ that have been identified include:

Symantec researchers investigated the feasibility of disabling all three key kernel integrity technologies: driver signing, Code Integrity, and PatchGuard. Results have shown that all three technologies can be permanently disabled and removed from Windows Vista after approximately one man-week of effort.

User Account Control has vulnerabilities. All in all Vista brings some security but the real problem is that the majority of attacks are not focused at the core software (the kernel) but to applications that run on top of that, such as Internet browsers, and other software.

Vista provides users with many low level security alerts¹⁴, and user account control is pervasive. The net result will likely be granting users higher security levels than may be warranted just to avoid the security alert messages. Vista assumes a policy level management approach to desktop security that is not currently utilized by the State.

Firewalls work by halting dangerous connections users make over the Internet. The Vista firewall does little to stop outbound communication; in fact "...most outbound filtering in the Windows Vista firewall is turned off. In addition, there may be no practical way to use outbound filtering to stop all unwanted outbound connections."¹⁵

Symantec has released two major Vista security assessments that raise a host of additional more granular issues.^{16,17}

¹³ Vista security issues, March 1, 2007, <http://www.our-picks.com/archives/2007/03/01/vista-security-issues>

¹⁴ Vista: an inconvenient security, ZDNet, November 27, 2007, <http://blogs.zdnet.com/Murphy/index.php?p=742>

¹⁵ Microsoft Vista firewall offers little outbound protection, IT World Canada, March 20, 2007, <http://www.itworldcanada.com/a/Security/80bdc0df-c7b3-4fd0-9a37-6f447bd849b3.html>

¹⁶ Hoagland, James, et al, *Windows Vista Network Attack Surface Analysis*, Symantec, 116 p., [2006]

¹⁷ Conover, Matthew, *Analysis of the Windows Vista Security Model*, Symantec, 18 p., [2007]

From a security perspective, Vista is now in the real world testing stage and the results are not conclusive, but there appear to enough issues to cause many organizations concern.

1.7.2 Vista—Known Application Compatibility Issues

The application issues presented in the Appendix address State applications that impact multiple desktops. This list does not address specific issues with platform specific utilities and other special purpose software. All information in the Appendix is the representation of the vendors of the product and is supported by many other Vista compatibility listings from customers that are implementing Vista migration plans. This list is rapidly changing as vendors update products for release with Vista.

1.7.3 Vista—State Information System Compatibility Issues

The State of Utah has a current installed base of in excess of 862 information systems that run with a wide variety of Web client and application specific client interfaces. No assessment has been completed for compatibility issues with this installed base. Some of the more obvious known problems include:

ESS	
Version:	Current deployment as of 3.15.2007
Vista Compatibility:	ESS does not support IE versions greater than 5.5x-6.x and Vista is tightly integrated with IE 7.x. It is unknown if it is possible to install a separate IE 5.5x or 6.x instance on a Vista desktop, but it is likely that there will be compatibility issues.
Issues:	N/A
Vendor Support:	ESS is currently being rewritten, but should be verified for compliance with IE7.x and Firefox 2.x and overall compliance with CSS and new browser functionalities.
Impact:	Enterprise; this impacts all Vista desktops and restricts browser updates for all other desktop environments.

In general, any State information system that uses a client that is not browser based is likely to have functionality issues with Vista. Browser based systems will work if they are compatible with IE 7.x or Firefox 2.x. Browser dependent systems will have issues that are at present unknown in scope with the exception of ESS as previously discussed. Citrix based systems should still be functional in a Vista environment if they are using the most current version of Citrix Presentation Server. This is an area that will require detailed assessment.

Microsoft has identified a number of changes in Vista that are known to cause application compatibility issues, such as:

- **User Account Control**—Applications will need to support new standard user permissions.

- **Windows Resource Protection**—System files and protected registry locations; applications that persist in protected areas will need to be modified.
- **Internet Explorer**—Internet Explorer will execute with lower rights, typically not allowing access to local files.
- **New System APIs**—These APIs expose the layers of the Windows Vista operating system for anti-virus software and firewall manipulation. Applications that perform these functions will need appropriate modifications using the new system APIs.
- **64-Bit Windows Vista**—16 bit applications and 32 bit drivers will not be supported in the Windows Vista 64 bit environment.

Custom-built applications may be revised to work with Vista; however, this is a costly and time-consuming endeavor. Packaged third-party applications may not support Vista for some time, which will complicate rollouts and hinder Vista adoption. The testing and remediation cycle needed to verify application compatibility for Window Vista is time consuming and includes assessment testing, compatibility testing, remediation, deployment testing, and finally deployment.

1.8 RECOMMENDATIONS

Migrating to Vista is not a given, at least in the near term, given the fairly substantial compatibility, hardware, and software upgrade requirements, and training issues associated with the change. At minimum, integration of Vista will need to be deferred until late in 2007 or early 2008 to ensure that major application upgrades and core infrastructure will support Vista users. As soon as Vista begins shipping as a standard environment on all workstations the State will need to be fully prepared to address implementation and compatibility issues. Existing customer demand is still causing OEMs to offer Windows XP and Vista options, but that is not likely to be a long lasting option.

1.8.1 Upgrading Existing Desktops for Vista

As a test, one Dell laptop and one HP dual core 64 bit desktop were evaluated, each of which was less than one year old, and each had a “Windows Vista Capable” label on them. The laptop required a full BIOS upgrade, ten specific software or driver upgrades, or explicit removal of some types of software in order for it to be Vista ready. The compatibility assessment software from Microsoft identified the problems but did not provide specific sources for the driver and software upgrades. The net result was in excess of four hours of research to finally resolve all of the known issues. One of the issues, an update to an Alps touchpad driver, was never resolved since neither the Alps nor OEM site had a more current driver. Resolution will require a direct contact with the OEM.

The HP desktop did not require a BIOS upgrade but did require a similar list of minor driver upgrades and software removal before the device was fully Vista ready. Both of these computers were dual core processor based machines with 1GB or greater

memory, large hard disks, and ATI video cards with 128 MB of memory and WDDM drivers. They exceeded the stated Windows Vista specification for hardware. It is estimated that over 80% of all desktops and laptops in the State are greater than one year old, and most would not be easily upgraded to support Vista. The vast majority of these machines have 512MB to 1GB of memory and most will have 64MB video cards without WDDM drivers. The remaining 20% of machines, perhaps as many as half of them, could be directly upgraded to Vista with minimal effort. The remainder would require a significant amount of effort to bring them into compliance with Vista hardware requirements, even if the memory, processor, and video requirements were met. National surveys have shown a relatively low level of Vista hardware capabilities for installed base PCs¹⁸.

About half of the average businesses PCs in North America are unable to meet the minimum requirements for Microsoft's Windows Vista operating system, while 94 percent do not meet the system requirements for Vista Premium.¹⁹

Software presented an entirely different problem. Software upgrades for compliance ranged from major and easily identifiable upgrades to Vista removal requirements for OEM software components such as the Dell "Document Manager" that could only be removed by deleting them from the registry; since they had no explicit uninstall function. At this point it is difficult to characterize specific application issues without a concerted effort at application compatibility assessment.

Recommendation

Existing machines should only be upgraded to Vista if there are specific user requirements that require Vista, such as for testing and evaluation. Existing machines should generally be left in their current OS environment.

1.8.2 Implementing a Mixed Operating System Environment with Vista and Windows XP

Implementation of a mixed Vista and Windows XP environment will not be possible until some of the major enterprise software in the State is Vista compliant. Most of these compliance issues should be met by the fall of 2007 by the major commercial vendors used by the State, such as Novell. In the current environment a Vista OS based machine could not print using iPrint, would not be visible to Zenworks, would not support GroupWise, except using the beta release client, and would not be able to use the Novell Client for making basic network connections unless they use the current beta release client. In addition, the machine user would have issues with entering payroll data into ESS. While most of these issues will be mitigated by vendors over time, they

¹⁸ *Half of American Business PCs Can't Run Vista*, eWeek.com, December 5, 2006, <http://www.eweek.com/article2/0,1895,2068351,00.asp>

¹⁹ *Ibid.*

represent issues that should not be ignored from customer satisfaction and support perspectives.

Recommendation

New machines should be ordered with Windows XP installed with provisions for a subsequent Vista clean install once compatibility issues have been resolved. Bringing in machines with Vista pre-installed should be deferred until at least October 2007 and possibly as late as sometime in 2008, after compatibility assessments have been completed.

1.8.3 Information System Compatibility with Vista

The existing information system inventory of the State is large and complex. A detailed assessment should be undertaken immediately to identify any Vista compliancy issues for each of these systems. In general the State needs to identify which of the existing information systems provide:

- browser based access that is not browser dependent (Vista compliant);
- browser based access that is browser dependent;
- browser based access with specific plug-in requirements;
- thick client based applications;
- Citrix based applications; and,
- terminal based access clients.

An assessment of effort is needed to identify what must be done to make these information systems compliant from a standard Vista desktop.

Recommendation

Establish a central coordination function and agency-led testing teams within DTS to identify and make remediation recommendations to help agencies make their information systems accessible from a Vista desktop. Tool environments from Microsoft, including the *Microsoft Application Compatibility Toolkit 5.0*, should be used to gather this data.

The time required to ensure hardware and software compatibility for State equipment and software applications is a significant investment. To minimize the time impact on agencies, some level of central testing and posting of Vista compatibility information should be initiated at the DTS departmental level. Results need to be regularly posted and updated on the DTS Web site or a similar site devoted to this issue.

Recommendation

Establish a central testing and communication function within DTS for testing and communication regarding Vista compatibility.

1.8.4 Office 2007 Compatibility with Earlier Versions of Office

Office 2007 provides a rich and useful user interface and significant functionality that could be of value to the State. Office 2007 allows users to save documents in Office 1997-2003 compatible formats. It is possible to default Office 2007 to save documents in these earlier formats while still taking advantage of the Office 2007 UI. Until there is a significant change in the installed base of Office 2007 the standard document format for interchangeability across State government must remain the 1997-2003 file formats, especially for Word and Excel documents. Additional study is needed to assess the full functionality benefits of Office 2007 and to identify recommended versions.

Recommendation

Establish Office 1997-2003 file formats as a transitional standard document exchange format for Word and Excel documents that are shared between agencies.

1.8.5 Procurement Strategy

Since it is a given that new workstations will require additional memory and functionality to efficiently run a Vista OS environment, it would be in the best interests of the State to establish a common minimum procurement standard for desktop equipment going forward. The standard should address preferred processor, memory, video capabilities, hard disk storage, and preferred installed operating system requirements. Future upgrades to Windows Vista Business should be required as a free upgrade from OEM vendors. Specific standards should be established for preferred versions of Microsoft Office 2007.

Recommendation

Establish minimum recommended requirements for workstation configuration procurement that will support the Vista OS environment. Identify supported versions of Microsoft Office 2007.

1.8.6 Other Considerations

Other areas that should be carefully assessed and considered as components of an overall Vista strategy include:

- Desktop support for Vista and Office 2007;
- Helpdesk support for desktop users;
- required desktop security patches;
- user access control deployment settings; and,
- alternative desktop environment options (e.g., OS X, SLED, etc.).

Each of these areas represents opportunities and issues that will impact an effective rollout of Vista across the enterprise.

1.9 CONCLUSION

Is a switch to Vista inevitable? Assuming the State maintains its existing Microsoft desktop approach and leaves other environments such as OS X and SLED as niche environments, the answer is probably yes. Vista is a when, not if type of discussion.

Figure 2 illustrates a possible Windows Vista deployment strategy for the State. The key activities that must be completed to carry out an effective Vista migration and effective deployment are illustrated in the Microsoft recommended sequence. This overall approach runs through the end of 2007, with effective Vista deployment on new machines taking place in the 4th quarter.

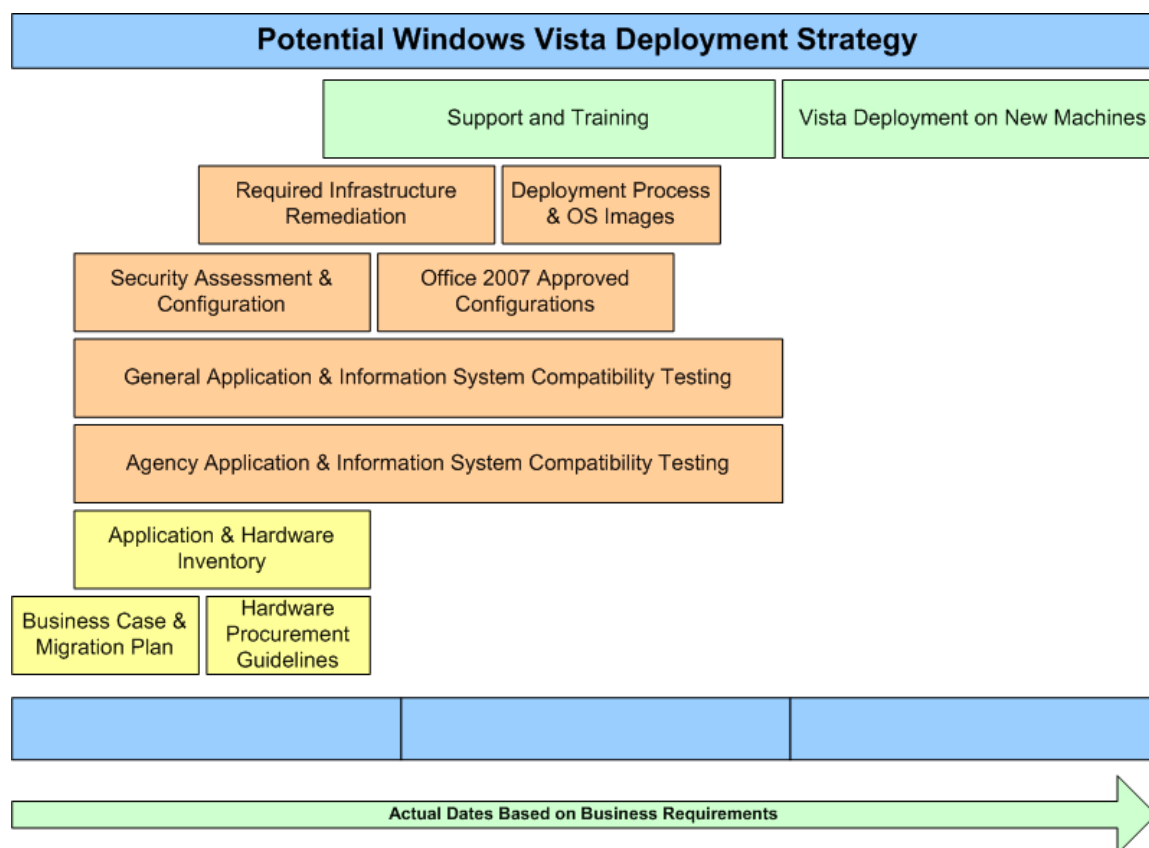


Figure 2. Potential Windows Vista Deployment Strategy

There may be some lag time in Vista adoption as users wait for applications to catch up to the new OS, but the State will eventually make the switch to Vista no matter how painful the process may be. Application and information system compatibilities will be the gating factors on establishing firm migration timelines. It is also likely that existing help desk services will need to migrate some of their time to support desktop environments so support issues do not become an ad hoc support quagmire for DTS.

Most analysts predict that enterprises will begin moving over to Vista on a large scale basis by 2008.

Once Vista is being shipped by OEMs on all new PCs, we won't be debating why people should move," said Andrew Brust, chief of new technology with consulting firm TwentySix New York. "It will be clear that they will need to do so, sooner or later. And honestly, people can argue until they're blue in the face about how XP is fine, but the reality is that it's five years old, technology has changed, and a new OS is necessary."²⁰

The key issues for the State are testing, planning, and a well defined migration plan to Vista or other operating environments, and what will be necessary to support these changes from both deployment and long term support perspectives.

DTS needs to make the Vista migration policy a clearly articulated one, and to the extent practicable, should centralize testing and deployment strategies to support future desktop management optimization directions.

The DTS Web site should be utilized to provide a central repository for Vista, and application compatibility, information. The site should include specific agency testing results and enterprise testing and compatibility information, as well as recommended procurement requirements.

The realities of Vista deployment in a complex environment offers some unique opportunities for the State to take better managed and more cost effective approaches to desktop management, procurement, and deployment.

²⁰ *No Rush to Adopt Vista*, PC World, December 26, 2006, <http://www.pcworld.com/article/id.128346/article.html#>

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Appendix: Vista—Known Application Compatibility Issues

The application issues that follow only address State applications that impact multiple desktops. This list does not address specific issues with platform specific utilities and other special purpose software.

Adobe Acrobat	
Version:	7.0, 8.0
Vista Compatibility:	Adobe Acrobat works with Vista but there are issues with installing updates.
Issues:	Adobe Update Manager can cause error messages when installing updates, but the updates install fine.
Vendor Support:	Unsupported. The vendor is testing a Windows Vista compatible version and plans to release free patches in the first half of 2007. See the Adobe TechNote Support policy for Acrobat 7 and 8 on Windows Vista for more details.
Impact:	Some users in most agencies.

Adobe Acrobat Reader	
Version:	8.0.0
Vista Compatibility:	Adobe Reader works with Vista.
Issues:	Adobe Reader can have problems installing on Vista. See the Adobe TechNote Adobe Reader 8 fails to install on Vista OS for more details.
Vendor Support:	Unsupported. The vendor is testing a Windows Vista compatible version and plans to release a patch in the first half of 2007.
Impact:	Enterprise, impacts most desktop users.

ArcGIS	
Version:	9.x
Vista Compatibility:	ArcGIS works with Vista but there are some issues with the License Manager.
Issues:	The License Manager does not function properly. It is possible to manually start LM from a command prompt.
Vendor Support:	Unsupported. The Vendor is working to certify ArcGIS 9 for Vista. See the ESRI Support Center FAQ for more details.
Impact:	Small. GIS users in a number of departments, and AGRC.

AutoCad	
Version:	2007
Vista Compatibility:	AutoCad is incompatible with Vista.
Issues:	N/A
Vendor Support:	Unsupported.
Impact:	Small. Some users in a number of departments.

Cisco Security Agent

Version:	5.0
Vista Compatibility:	Cisco Security Agent is incompatible with Vista.
Issues:	N/A
Vendor Support:	Unsupported. Cisco expects to have a Vista compatible version in Q3 2007.
Impact:	Unknown.

Cisco VPN Client

Version:	4.8.02.0010 beta; earlier versions will not work with Vista.
Vista Compatibility:	The Cisco VPN client beta works with Vista but has issues.
Issues:	Cisco VPN Client does not support VPN start before logon; uninstall warns that VPN service is still running.
Vendor Support:	Unsupported. Cisco still considers the Vista portion of this client's code as beta.
Impact:	Unknown, but will impact Cisco VPN users across the enterprise that use Vista.

Firefox

Version:	2.0.x
Vista Compatibility:	Firefox works with Vista but has issues.
Issues:	See the Firefox release notes at http://www.mozilla.com/en-US/firefox/2.0.0.2/releasenotes/#vista for details.
Vendor Support:	Officially supported.
Impact:	About 20-30% of all desktops.

GroupWise

Version:	7.0. and earlier versions
Vista Compatibility:	Firefox works with Vista but has issues.
Issues:	GroupWise 7SP1 will not install on Vista, and simply does not work.
Vendor Support:	Officially supported as of April 2007. The beta release of the client has been posted on the NUI Web site at http://state.ut.us/download/gw702betace.exe .
Impact:	All Vista desktops.

Intellisync

Version:	5.3.4 and earlier versions
Vista Compatibility:	Intellisync is incompatible with Vista.
Issues:	The application will not install on Vista.
Vendor Support:	Nokia has announced that a Vista compatible version will be released but has not announced a specific date as of 3/30/2007.
Impact:	All Vista desktop users that use Intellisync.

Microsoft ActiveSync

Version:	4.5 and earlier versions
Vista Compatibility:	ActiveSync is incompatible with Vista. It has been replaced with <i>Windows Mobile Device Center</i> at http://www.microsoft.com/windowsmobile/devicecenter.mspx
Issues:	N/A
Vendor Support:	Unsupported. See the <i>Microsoft ActiveSync</i> site at http://www.microsoft.com/windowsmobile/activesync/activesync45.mspx for more details.
Impact:	Unknown, but will impact ActiveSync users in all agencies. Employees using paired synchronization with two machines will no longer be able to use that functionality unless both machines are using the same operating system, either Windows XP or Vista.

Novell Client

Version:	1.0 Build 20070125
Vista Compatibility:	The beta version of the Novell client for Windows Vista works with Vista.
Issues:	N/A
Vendor Support:	Officially supported. The beta client is available from the Novell Downloads site at http://download.novell.com/Download?buildid=yIEJzwGwlu0%7E . The released client will be available in May or June 2007.
Impact:	Enterprise, all Vista desktops.

Novell iFolder

Version:	3.2.5347.1 and earlier versions
Vista Compatibility:	iFolder does not work with Vista.
Issues:	N/A
Vendor Support:	iFolder will be officially supported and will have a compatible client released in July 2007.
Impact:	Small; all Vista desktop users that are currently using iFolder with Windows XP.

Novell iPrint Client

Version:	4.15
Vista Compatibility:	Novell iPrint client is incompatible with Vista.
Issues:	N/A
Vendor Support:	Unsupported. Novell expects to have a Vista compatible iPrint client available in May or June 2007. See the Novell Open Audio - Novell Client Update for more details.
Impact:	Enterprise, all Vista desktops.

Novell ZENworks for Desktops Agent

Version:	7
Vista Compatibility:	Novell ZENworks for Desktops Agent is incompatible with Vista.
Issues:	N/A
Vendor Support:	Unsupported. Novell will add Vista support for ZENworks in version 7.5. See the <i>ZENworks Support for Windows Vista</i> tip for more details at http://www.novell.com/coolsolutions/tip/18445.html . The tentative release date is June 2007.
Impact:	Enterprise, all Vista desktops.

Oracle Developer

Version:	10g
Vista Compatibility:	Oracle Developer is incompatible with Vista.
Issues:	N/A
Vendor Support:	Unsupported. Oracle says that they will begin certifying products for Vista in 2007.
Impact:	Unknown

Palm Desktop

Version:	4.1.4e and 4.2
Vista Compatibility:	These are the only versions that are represented as Vista compatible.
Issues:	N/A
Vendor Support:	Earlier versions of Palm desktop have not been tested on Vista and are not supported. Versions 4.1.4e and 4.2 are the only supported versions.
Impact:	Earlier versions of Palm desktop will likely need to be upgraded.

RealPlayer

Version:	6.0.12.1741
Vista Compatibility:	RealPlayer works with Vista but has issues.
Issues:	N/A
Vendor Support:	Unsupported. Vendor is working on a Vista compatible version. See the RealPlayer Answer ID 6757 for more details.
Impact:	Enterprise, all Vista desktops.

SAS	
Version:	9.1.3
Vista Compatibility:	SAS is incompatible with Vista.
Issues:	N/A
Vendor Support:	Unsupported. Vista will be supported under SAS 9.2. See <i>Support for Microsoft Windows Vista</i> at http://support.sas.com/techsup/pcn/vista.html for more details.
Impact:	Unknown; all Vista desktop users that use SAS.

SPSS	
Version:	15 and earlier versions
Vista Compatibility:	SPSS is incompatible with Vista.
Issues:	N/A
Vendor Support:	Unsupported. The Vendor is testing SPSS with Vista and plans to release a free patch once the compatibility issues are addressed.
Impact:	Small, but a number of users of SPSS in agencies that could use a Vista desktop.

COMMENTS

Please direct comments and suggestions on this document to
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